CV for Dag Svanæs

Education and employment

This chapter describes my formal education, my employment history and my sabbaticals from NTNU.

Name: Dag Svanæs
Date of birth: 20. Feb 1959
Nationality: Norwegian
Address: Lade Alle 48B, 7041 Trondheim, Norway
Phone: +47 91897536 (mobile), +47 73591842 (work)

Education

2000	Ph.D. in Computer Science/Human-computer Interaction ("Doctor Philos."). Cross-disciplinary thesis on interactivity. NTNU.
1984	Social Anthropology University of Oslo. ("Mellomfag")
1982	Master of Science in Electronics. Thesis on logic programming for VLSI design. Norwegian Institute of Technology (NTH), Trondheim, Norway.

Employment

Full time employments

1986-present	Assistant/Associate Professor/Full Professor, Department of Computer and Information Science, Norwegian University of Science and Technology (NTNU), Trondheim, Norway. (Full professor since 2009).
2001-2002	A one-year leave from NTNU as Professor in Interaction Design and Director of Teaching Programme, Interaction Design Institute Ivrea, Italy.
1984-86	Higher Executive Officer ("Førstekonsulent"), Norwegian Ministry of Education, Oslo, Norway. Part of the task force on introduction of computers to the Norwegian Schools system. Responsible for the development of a user-interface design tool that enabled teachers to construct educational software.

1983-84   Software Researcher, The Computing Center at the Norwegian Institute of Technology, Trondheim, Norway. Worked with the development and evaluation of a compiler and run-time system for the CHILL programming language.

Some part time employments

2009-present Associate Professor (30%) at IT University of Copenhagen, Denmark.

2004-2008   Part time senior researcher at Norwegian Center for Electronic Patient Records (NSEP), NTNU – Trondheim. Responsible for building up and managing a full-scale usability laboratory for evaluation of ICT solutions in healthcare. Part of the NSEP advisory team.

2000-2001   Consultant for Telenor R&D.

1996-2000   Part-time Professor, Mid-Sweden University, Østersund, Sweden. Responsible for teaching courses on object-oriented systems and HCI.

1997-2000   Lecturer, Mogul.com, Oslo, Norway (now Kantega.com). Teaching courses in interaction design to professionals in the software industry.

1990-95   Consulted for Nordic Council and SINTEF Research, Oslo on the design of user interfaces for disabled users. Responsible for the first implementation of the interface design tool COMSPEC. This resulted in a large EU project in the TIDE program.

Sabbaticals from NTNU

1998   One term sabbatical leave as paid guest lecturer at Stanford University, Computer Science Department. Responsible for Professor Terry Winograd's philosophy course, and helped in on Verplank's interaction design studio. At the same time consulted for Interval Research on Tangible Interaction.

1995   One term sabbatical leave as guest researcher at Advanced Technology Group, Apple Computer, Cupertino, CA. Did research on object-oriented design tools (SK8) and educational software (KidSim, now stagecast.com).

Selected list of publications

Peer-reviewed journals (2005-2011):
1. Alsos, Ole Andreas; Das, Anita; Svanaes, Dag. Mobile health IT: The effect of user interface and form factor on doctor–patient communication. International Journal of Medical Informatics 2011
2. Roemen, Dagfinn; Svanaes, Dag. Validating WCAG versions 1.0 and 2.0 through usability testing with disabled users. Universal Access in the Information Society 2011
3. Dahl, Yngve; Alsos, Ole Andreas; Svanæs, Dag. Fidelity Considerations for Simulation-Based Usability Assessments of Mobile ICT for Hospitals. International Journal of Human-Computer Interaction 2010;Volum 26.(5) s. 445-476
4. Dahl, D, Alsos, OA., Svanæs, D. (2009) Evaluating Mobile Usability: The Role of Fidelity in Full-Scale Laboratory Simulations with Mobile ICT for Hospitals. Human Computer Interaction; New trends. Springer 2009 ISBN 978-3-642-02884-7.
5. Svanaes, D., O. A. Alsos, et al. (2008). Usability testing of mobile ICT for clinical settings: methodological and practical challenges. International Journal of Medical Informatics, Special issue on Human Factors.
6. Dahl, Y. and D. Svanaes (2008). A Comparison of Location and Token-Based Interaction Techniques for Point-of-Care Access to Medical Information. Personal and Ubiquitous Computing, Springer.

Peer-reviewed conferences (2005-2010):
7. Das, Anita; Faxvaag, Arild; Svanaes, Dag. Interaction design for cancer patients: do we need to take into account the effects of illness and medication?. Proceedings of the 2011 annual conference on Human factors in computing systems. ACM Press 2011 ISBN 978-1-4503-0228-9. p. 21-24.
8. Alsos, Ole Andreas; Svanaes, Dag. Designing for the secondary user experience. Interact 2011. Lecture Notes in Computer Science 2011
9. Das, Anita; Faxvaag, Arild; Svanaes, Dag. Management of Weight-Loss: Patients' and Healthcare Professionals' Requirements for an E-health System for Patients. Lecture Notes in Computer Science = Lecture notes in artificial intelligence 2011 ;Volum 6776. p. 285-294
10. Svanaes, Dag; Faxvaag, Arild; Das, Anita; Alsos, Ole Andreas; Røsand, Terje.The NSEP Usability and Design Laboratory. I: Proceedings of the fifth international symposium on Human Factors Engineering in Health Informatics. Tapir Akademisk Forlag 2011 ISBN 978-82-519-2830-4. p. 25-30
11. Svanaes, D. and J. Gulliksen (2008). Understanding the context of design: Towards tactical user-centered design. Proceedings of NordiCHI 2008. Lund, ACM Press.
12. Roemen, D. and D. Svanaes (2008). Evaluating Web Site Accessibility: Validating the WAI Guidelines through Usability Testing with Disabled Users. Proceedings of NordiCHI 2008. Lund, ACM Press.
13. Svanaes, D., A. Das, et al. (2008). The Contextual Nature of Usability and its Relevance to Medical Informatics. Proceedings of MIE 2008, 21th International Congress of the European Federation for Medical Informatics. Amsterdam: IOS Press Publisher, Stud Health T Inform.
14. Dahl, Yngve; Svanæs, Dag.Visualizing Interaction in Digitally Augmented Spaces: Steps toward a Formalism for Location-Aware and Token-Based Interactive Systems. Lecture Notes in Computer Science 2007 ;Volume 4551.
15. Dahl, Yngve; Svanæs, Dag; Nytrø, Øystein. Designing Pervasive Computing for Hospitals: Learning from the Media Affordances of Paper-Based Medication Charts, Proceedings of 1st International Conference on Pervasive Computing Technologies for Healthcare, Austria 2006, IEEE Press.

16. Svanæs, Dag; Alsos, Ole Andre. Interaction Techniques for Using Handhelds and PCs Together in a Clinical Setting. I: Proceedings of the Fourth Nordic Conference on Human-Computer Interaction. Oslo: ACM Press 2006. ISBN 1-59593-325-5. p. 125-134

Invited keynotes (2005-2010):

17. Svanæs, Dag. Invited keynote talk: Standards on usability for medical informatics, IMIA WG meeting on HFE in HI, Sonoma, California, IMIA, 2009.
18. Svanæs, Dag. Invited keynote talk: Organizational Obstacles to Usability in Health-IT Development and Acquisition. I: HFE 2007 Proceedings. Aalborg Universitetsforlag 2007 ISBN 978-87-986264-8-0. p. 10-11.
19. Svanaes, D. Organizational Obstacles to Usability in Health-IT Development and Acquisition. Human Factors Engineering in Health Informatics. Aarhus, Denmark. Invited keynote tal, 2007.
20. Svanaes, D. Usability work in the wild: Understanding the context of design. STIMDI 20 years conference. Stockholm. Invited talk. 2006.

Some older peer-reviewed publications (pre 2005):

21. Svanæs, D. and G. Seland (2004). Putting the users center stage: role playing and low-fi prototyping enable end users to design mobile systems. Proceedings of the SIGCHI conference on Human factors in computing systems. CHI´04. Vienna, Austria, ACM Press.
22. Svanæs,D. Context-Aware Technology: A Phenomenological Perspective, Human-.Computer Interaction 16 (2001), special issue on context-aware computing, (Dourish, P., Moran,T. eds.), 379-400, 2001.
23. Svanæs, D., Verplank, W. In Search of Metaphors for Tangible User Interfaces, DARE'2000, ACM, 2000.
24. Svanæs, D. Understanding Interactivity: Steps to a Phenomenology of Human-Computer Interaction, Monograph, Computer Science Department, ISBN 82-471-5201-0, NTNU,Trondheim, 2000.
25. Svanæs, D. Kinaesthetic Thinking: The Tacit Dimension of Interaction Design, Computers in Human Behavior, 13 (4), pp. 443-463, Elsevier, 1997.
26. Svanæs, D. What is Interactivity?, In proceedings of Dagstuhl seminar on Informatics and Semiotics, Report 135, Schloss Dagstuhl, 1996.
27. Svanæs, D., Monteiro, E., The role of empirical evidence in software engineering, Norwegian Informatics Conference 1993, University of Oslo, 1993.
28. Svanæs, D. Interaction is Orthogonal to Graphical Form. Short paper INTERCHI'93, Adjunct Proceedings. ACM 1993.
29. Svanæs, D. Research Summary: (De)Constructing Interaction. Position paper for Research Symposium, INTERCHI'93, ACM 1993.
30. Svanæs, D. The Perception of Interaction. Position paper for Workshop on spatial metaphors, INTERCHI'93, ACM 1993.
31. Svanæs, D., Lundälv, M, and Poon, P. The specification of a versatile communication and writing tool. ECKART´2 conference proceedings, Stockholm 1993.
32. Svanæs, D., Lundälv, M. Comspec - Towards a Modular Software Architecture and Protocol for AAC Devices. 1st TIDE Congress proceedings, IOS Press, Amsterdam 1993.
33. Svanæs, D. COMSPEC: a software architecture for users with special needs. Short paper INTERCHI'93, Adjunct Proceedings. ACM 1993.
34. Svanæs, D. Seeing and Doing: A Case Study of the Interplay between Theory and Practice. IRIS´92 working conference, University of Oslo, 1992.
35. Svanæs, D. and Thomassen A. The Growth of a MOSAIC, in D.A.Duce et al. (eds.) User Interface Management and Design, Springer-Verlag, Berlin, 1991, pp. 195-202.
36. Svanæs, D. Metaphors We Design By, in Norwegian Informatics Conference 1991, University of Oslo, 1991.

37. Svanæs, D., Simulation Models + User Interfaces = Interactive Applications. Computers and Education: An international journal. Elsevier Press 1990.

Proceedings (as editor)

38. Mørch, Anders Irving; Morgan, Konrad; Bratteteig, Tone; Ghosh, Gautam; Svanæs, Dag. Proceedings of the Fourth Nordic Conference on Human-Computer Interaction (NordiCHI 2006). ACM Press 2006 (ISBN 1595933255) 505 s.
39. Svanaes, Dag; Faxvaag, Arild. Proceedings of the fifth international symposium on Human Factors Engineering in Health Informatics. Tapir Akademisk Forlag 2011 (ISBN 978-82-519-2830-4) 220 pg.

Research management

Recent projects

Norwegian Center for Electronic Patient Record (NSEP) (2004-present)
NSEP was established in 2004 as a national center for research in health ICT. It got basic funding from the Norwegian Research Council (NFR) for a 5 year period. I was involved in the project from the start, and have since its beginning been part of the five person "leader group" of NSEP. Most of my research since 2004 has been related to this center. (Total center budget: 25 MNOK).

NSEP usability laboratory (2003-present)
In 2003 I made an application to NFR for a full-scale usability laboratory for testing mobile ICT for hospitals. The application was prioritized as #1 from NTNU, and got funding from NFR (1.1 MNOK). NTNU committed themselves to pay 50% of a lab engineer for the lab over a four year period. I was at the same time involved in the establishment of NSEP. I got additional funding from NTNU and the NSEP project to co-locate the lab as part of NSEP. I designed the lab and together with the engineer I built a full-scale usability lab with movable walls. To our knowledge it is at present the only flexible usability lab of that size in Europe.

Since its opening in 2005 the lab has been used in a number of projects. I function as manager of the lab and handle the externally funded projects through IDI. Projects done so far in the lab include:
- 2005: Usability test of Deriga´s MedAxess system. External funding from Deriga (now Visma). We hired an experienced usability expert from Kantega (a former student of mine) to do the testing.
- 2005: Usability test of PDAs for controlling patient terminals. Master thesis done in cooperation with Cardiac Medical.
- 2006: Usability tests of location-based systems. Part of Yngve Dahl´s PhD thesis. Done in cooperation with Telenor R&D and RadioNor AS.
- 2006: Functional test of the Ekahau location-based technology in a simulated ward environment. Master thesis.
- 2007: Usability test of Siemens´ new mobile DocuLive module. External funding from HEMIT.
- 2007: Usability test of Ground Control Lab´s mobile P2P system. Master thesis done in cooperation with the company.
- 2007: Comparative test of MedAxess with cancer patients. Master thesis in cooperation with Visma.

In addition, the lab has been used by a number of students in smaller projects. The lab also functions as NSEPs lab for testing out technical solutions in realistic environments, and has been used for meetings that needed to be recorded.

The usability lab at Århus hospital in Denmark ("Skylab") has been inspired by our lab. They built their lab last year after a visit in Trondheim in 2005. In august 2007 we had a visit from the ICT department of the Copenhagen health region in Denmark.

They wanted to learn from us how to build up a similar lab. They now have three persons on that project in Copenhagen.

At present (sept. 2007) two persons are full time occupied with work in the lab in addition to my work as lab manager/director. (Total project budget up until now, including personnel costs: approx. 3 MNOK).

NFR VERDIKT project PocMap (2005-present)
In 2005 I made an NFR application together with Ø. Nytrø and A. Faxvaag for a research project on mobile ICT for doctors and nurses. We got funding from NFR for two post-docs and one PhD in three years. Together with Nytrø I function as project lead and manager of this project. I am also supervisor for the PhD student. The project is funded with approx. 1 MNOK by DIPS A/S. DIPS is the largest health-IT software company in Norway. (Total project budget: 7 MNOK).

Telenor R&D project "Mobile Peer-to-peer computing" (2000-2002)
I initiated and managed this project with funding from Telenor R&D. It involved a total of 8 M.Sc. student in computer science and product design. The funding was for equipment and travel. In addition to the funding through NTNU, T.A. Øritsland at dept. of Product Design and I consulted for Telenor on the subject. (Total project budget: 0.3 MNOK).

Some earlier projects

MOSAIC (1984-86)
I was the initiator of this project and managed the implementation of the Mosaic tool. This involved three programmers over a period of two years. The project later resulted in scientific publications, but most of my job at that time was as project lead for the programmers. (Total project budget: approx. 1 MNOK).

Simulation models for education (1987-88)
I got funding from Norwegian Research Council for a research assistant for one year. I managed this person, and we cooperated on the research. (Total project budget: approx. 0.4 MNOK)

COMSPEC (1992-96)
I functioned as a lead software architecture and user interface designer in the project. I got funding from the Nordic Council to hire a research assistant/programmer. I managed this person and directed the research done in Trondheim. (Total project budget for NTNU: approx. 0.3 MNOK)

Research projects

My scientific production spans a period of 25 years, from my M.Sc. thesis and its resulting journal paper in 1982/83 until the present. I have chosen to present it as five parts:

    I.   Projects and publications prior to my PhD (1982 – 1999)
    II.   My PhD project (1992 – 2002)
    III.   Projects and publications in the area of ubiquitous computing (1998 -)
    IV.   Projects and publications in the area of health informatics (2001 -).
    V.   Projects and publications in the area of HCI and interaction design methodology (1999 -).

The reason for not starting with the PhD is that my PhD is a Norwegian *"Dr.Philos."*. This is a degree which is normally done relatively late in the academic career and that sums up individual research done over a longer period. In my case, I had already been involved in a number of research projects in other areas before submitting my *Dr.Philos.* monograph in 1999.

I. Projects and publications prior to my PhD (1982 -1999)

VLSI design and Logic Programming (1982/83)
My M.Sc. thesis was a self-initiated project on the use of logic programming for VLSI design. Directly after the thesis, my thesis advisor hired me for two months to prepare the thesis work as a paper and a report.

FORTVER: Fortran verifier (1982-86)
During the last year of my M.Sc. I initiated a student compiler project. Together with two fellow students I wrote a FORTRAN syntax- and consistency checker (for fun). The student project was continued as a research project and product in cooperation with R. Conradi. It was used in a number of large FORTRAN projects to check for internal consistency and portability.

MOSAIKK: Educational software design tools (1984-86)
In 1984 I was hired by Norwegian Ministry of Education in their educational software initiative to aid in the training of teachers and in development of software. Here I initiated a software design tool project with the aim of making it possible for teachers to design the user interface for new software in a WYSIWYG manner. The resulting software tool MOSAIKK was used in a number of educational software projects in Scandinavia over a periods of 5 years. I also integrated MOSAIKK with tools for simulation.

       During my first years at NTNU (then UNIT/AVH) I got funding from the National Research Council (NFR, then NAVF) to test out these design tools in a project on the use of dynamic simulations as an educational aid in biology and ecology. Together with a hired biologist we built a number of applications and tested them out in some high schools in Trondheim.

       In addition to the technical papers I also produced some reflections on educational software in general.

During my sabbatical at Apple Research in Cupertino I got in contact with the developers of the KidSim tool. I tested out this software in a Norwegian school. This resulted in a presentation on local TV.

COMSPEC: Design tools for universal access (1992-96)
Because of my role in the MOSAIKK project I got involved in a Scandinavian project on building user interfaces for disabled users. My role was to design and build the first prototype of a user interface design tool for non-programmers. I got funding from the Nordic Council to hire a research assistant/programmer. I functioned as a lead software architecture and user interface designer in the project. The project later expanded into a three year SINTEF project financed from the EU-TIDE programme.

Other publications
The following is a list of publications not related to any of the above topics:
- I gave the introductory talk at the 1990 Norwegian Computing Society (DnD) conference on Human-Computer Interaction.
- In 1991 I wrote a paper for Datatid on "The hidden message in computer technology".
- Together with E. Monteiro I wrote a NIK-93 paper on the role of empirical evidence in software engineering.
- For Kritikkjournalen I wrote a paper on the role of science-of-philosophy in the new 1994 Norwegian school reform for secondary education.

II. My PhD project (1991 – 2002)

My PhD thesis is the result of a self-initiated project on building a theoretical foundation for human-computer interaction (HCI). It started out with a theoretical curiosity resulting from the MOSAIC and COMSPEC projects. Through these tools I had given a lot of ordinary users the ability to design interactive applications, but I had no idea what interactivity was really all about.

Reading Winograd & Flores´ (1986) *Understanding Computers and Cognition* inspired me to dig deeper into the theoretical foundations of the HCI field. For the NIK-91 conference I wrote a paper on design and phenomenology. For CHI´93 I built some abstract interactive artefacts and did a psychological experiment. This presentation led me in contact with W. Verplank from Stanford/Interval Research and people from Apple Research, Cupertino. This enabled me to have a 1995 fall sabbatical at Apple Research and a 1998 spring sabbatical at Stanford/Interval Research.

At CHI´93 I also had a presentation at the basic research symposium and at a workshop on spatial metaphors. At PDC´94 I had a presentation in the artefact session.

As a result of these presentations and my evolving research network I was invited to present my work at the Dagstuhl seminar in 1996 on Informatics and Semiotics. The main findings from the empirical part of my thesis work was presented in a journal paper in 1997. During my 1998 sabbatical at Stanford I presented the work in T. Winograd´s *People and Computer symposium*. I also gave classes with Winograd and Verplank at Stanford in Phenomenology and Interaction design. My discussions with Winograd and Verplank helped me focus the thesis and encouraged me that this was really Computer Science research.

The thesis was submitted in 1999 for a Norwegian *Dr.Philos.* degree.. The thesis work has been presented in a number of guest lectures, e.g..

III. Projects and publications in the area of ubiquitous computing (1998 -)

Tangible User Interfaces and Context-aware Computing (1998-2001)
During my sabbatical at Stanford/Interval Research in 1998 I got introduced to the ongoing research on ubiquitous computing. I applied the basic theory that I had developed in my PhD for screen-based interaction to interaction with tangible user interfaces (TUIs). Through Interval Research I also got in contact with H. Ishii and B. Ullmer at MIT Media Lab. When I returned to Trondheim I had three M.Sc. students reimplement some of Ullmer´s work and do a usability experiment on the resulting systems. The main results from this student project, together with some of the basic theory research that I had done at Interval, is reported in. This basic theory research was followed up in a paper where I applied phenomenology on context-aware computing. For DIS´2000 I was on a panel concerning teaching tangible interaction. During my stay in Ivrea, Italy I developed a course on tangible interaction, and initiated a number of student projects in this area.

Mobile computing (2001-2002)
In 2001 I initiated a research project on mobile computing in cooperation with Department of Product Design at NTNU with funding from Telenor R&D. A total of X M.Sc. students were involved in the project, including the three students on the TUI project. The project is summed up in .

Pulse – An interactive medallion (2000)
For the official opening of a new building at NTNU in 2000 I got funding to develop an interactive "wearable". Together with T.A. Øritsland at the Dept. of Product Design I developed and produced 3000 pcs. of this gadget. One of them was worn by the Norwegian king during the opening.

Ubiquitous computing for hospitals (2003-)
In 2003 I initiated a student project at NTNU on distributed user interfaces (PDA + touch screen) for hospitals in cooperation with Cardiac Medical.
    Together with PhD student Y. Dahl I ran a research project on location- and token-based interaction. Together with Dahl I further developed the formalism. p in

IV. Projects and publications in the area of health informatics (2001-)

The usability laboratory at NSEP (2003-)
In 2003 I got funding from the National Research Council for a usability laboratory for mobile health informatics. At the same time I got involved in the development of NTNUs application for a national research centre on health informatics. NTNU got the centre (NSEP), and we decided to make the lab an integral part of it. In 2004 I built the lab, and we got NTNU funding for a 50% lab assistant. The laboratory has since been used in a number of student and research projects, and is currently an important part of NSEP. Most of my empirical research in the area of ubiquitous

computing after 2004 has been done in this lab. A presentation at the first Human Factors in Healthcare conference sums up the experience from the first two years.

VERDIKT project PocMap (2006-)

In 2006 I co-authored an application to NFR with Ø.Nytrø and A.Faxvaag for a project on mobile electronic medical records. The project got approved, and now runs for three years with two researchers and one PhD. It is partly funded by the largest Norwegian EMR vendor DIPS. As the project has just started, we have no resulting publications beyond a conference presentation.

Usability evaluation of e-Health solutions (2005-)

In 2005 we got paid by Deriga AS to do a usability test of their web-based solution for patient-physician communication. The results from the test were used as input in their redesign of the system. During the test we observed a difference in performance between different patient groups. This led me to formulate a master thesis in this area. The result from this 2007 thesis is being written up as journal paper together with the student and the second advisor.

Medical Informatics (2003-)

Together with Y. Dahl and Ø. Nytrø I wrote a paper on the media affordances of paper-based medical charts. This work will be continued in the PocMap project.

In 2005 I was invited to give a talk on the usability challenges for electronic medical records at the annual Danish health informatics conference. In 2007 I was invited as keynote speaker at the 2nd Human Factors in Medical Informatics conference. Most of my work in ubiquitous computing and HCI is currently related to health informatics in one way or another.

V. Projects and publications in the area of HCI and interaction design methodology (1999-)

Drama as a design methodology (2000-)

Since my early involvement with the Grimstad courses for teachers in the late 80s, I have had an interest in design methodology. As part of the Mobile Computing project for Telenor R&D I initiated and ran an experimental design workshop in 2000 on the use of drama for interaction design. I hired a drama teacher, and for two days we had 15 high school students design new mobile devices through drama improvisation and lo-fi prototyping. In 2001 I got internal NTNU funding for a PhD student in this area. Over the next two years we conducted a number of design-through-drama workshops with doctors and nurses. The resulting design methodology was presented at CHI´04.

NordiCHI 2006 (2005-2006)

I was on the programme committee for NordiCHI 2000, 2002 and 2004. In 2003 I arranged with The Norwegian Computing Society (DnD) to apply for NordiCHI 2006 in Oslo. The application was accepted. I was conference chair together with G. Ghosh from DnD, and responsible for coordinating all the different academic activities (papers, workshops etc.). I am currently on the steering committee of NordiCHI. NordiCHI is currently the second largest HCI conference in Europe.

The organisational context of design (2003-)
Through my work with building up the NSEP usability laboratory and developing new design methodologies it became clear to me that change of design practice requires more than the availability of good methods and labs. This led me to focus on the organisational context of systems design. In 2003 I initiated a student project studying the bid process for a large ICT acquisition at the regional hospital in Trondheim. This process was compared to the ICT design process at a hospital in Oslo. The resulting two M.Sc. works were summarized in a NSEP publication in 2004.

My reflections on the importance of a focus on the organisational context of design has been the topic of two keynote presentations and an invited conference presentation. I was also one of the organisers of an INTERACT´05 workshop on a similar topic concerning e-Government. At HCI´05 I was invited to present my views on the organisational context of design in a panel session. A paper on the topic together with J. Gulliksen was presented at NordiCHI 2008.

VI. Other projects

In addition to the above project where I have been the initiator, I have been scientific advisor on the following research projects:

2005-2007: SINTEF Famous project
This is a EU project with PhD students. My role was to give input on matters related to HCI and usability.

1996-2002: SINTEF/Nordic Council COMSPEC project
As one of the initiators of this project I was advisor on the project in its later phase.

2003-2004: External expert for start-up company
I was scientific advisor for the company ViewStart in Steinkjer.

Conference committees, PhD defences etc.

This chapter describes my involvement in national and international committees for conferences, PhD defences and teaching programme evaluations.

Conference chairing

I was on the programme committee for NordiCHI 2000, 2002 and 2004. In 2003 I cooperated with The Norwegian Computing Society (DnD) to apply for NordiCHI 2006 in Oslo. The application was accepted. I was conference chair in October 2006 together with G. Ghosh from DnD, and responsible for coordinating all the different academic activities (papers, workshops, tutorials, doctor colloquium, proceedings etc.).

I am currently on the steering committee of NordiCHI. Together with British HCI, NordiCHI is currently the largest HCI conference in Europe. The conference had approx. 400 participants. The conference has ACM cooperating conference status, the proceedings are published as an ACM Press book and the papers are indexed in ACM´s Digital Library.

During the two year process leading up to NordiCHI 2006 I managed to bring together most of the people in Norway from academia and industry that do research on HCI and related topics. The process of planning and running NordiCHI 2006 has helped develop a shared HCI research community in Norway.

In 2001 I chaired the fifth international symposium on Human Factors in Health Informatics in Trondheim.

Programme committees

I have been on the technical programme committee of the following conferences and workshops:

- NordiCHI 2000, 2002, 2004, 2006, 2008, 2010 and 2012.
- CADE 2004, Computer in Art and Design Education Conference.
- NORDES 2007, 2008 The Second Nordic Design Research Conference.
- HFEHI 2007, Human Factors Engineering in Health Informatics Conference.
- ACHI 2008, The First International Conference on Advances in Computer-Human Interaction
- CHI 1994 Basic Research symposium.
- CHI 1996 End-user programming workshop
- INTERACT 2005 workshop on e-government.

Reviewing and editorial boards

In addition to reviewing papers on the conferences above where I have been on the program committee, I have been reviewer for the following conferences and publications:

- ACM CHI 2003, 2004, 2005, 2006, 2008, 2009
- NIK, Norwegian Informatics Conference (a number of years)
- A number of papers in HCI journals

I am on the board of the journals *Interacting with Computers* and *Digital Creativity*.

PhD committees

I have been on the following PhD committees, as 1st, 2nd or 3rd opponent:

- 2011 Harald Holone, University of Oslo. (1st opponent)
- 2011 Jesper Wolff Olsen, Århus Univ. (1st opponent)
- 2010 Daniel Saakes, Delft (one of 6, dutch tradition)
- 2010 (planned) C.Sc. Asbjørn Thomassen, NTNU (3rd opponent)
- 2009 Clemes Klokmose, Århus Univ. (1st opponent)
- 2009 Jonathan Bunde-Pedersen, Århus Univ. (2nd opponent)
- 2008 Hans Bjelland, Product design, NTNU (3rd opponent)
- 2007 Jo Herstad, Informatics, University of Oslo, (2nd opponent)
- 2007 Lars Botin, Media Science, Ålborg University, (2nd opponent)
- 2007 Petter Alexanderson, C.Sc. Lund University (1st opponent)
- 2006 Stefan Blomkvist, C.Sc., Uppsala University (1st opponent – "licensiat")
- 2006 Anders Kluge, Informatics, University of Oslo (2nd opponent)
- 2006 Anne Mangen, Media Studies, NTNU (2nd opponent.)
- 2005 Tomas Sokoler, Dept. of Interaction Design, K3 in Malmö. (2nd opponent)
- 2004 Thomas Hoff, Department of Psychology, NTNU (1st opponent)

External evaluator

I have been an external evaluator on the following evaluations of teaching programmes

Evaluator of Malmö University
In 2010 I was asked by the Swedish National Agency for Higher Education (HSV) to be one of two non-Swedish experts in an evaluation of the PhD right for this school.

KK-Stiftelsen
In 2010 I evaluated a large research from Malmö K3 to the KK research council.

National evaluation of Swedish bachelor programmes in Interaction Design
In 2006 I was asked by the Swedish National Agency for Higher Education (HSV) to be one of two non-Swedish experts in a national evaluation of seven Bachelor programmes in interactive and digital media. We visited the schools and produced a report. The resulting report in 2007 (see www.hsv.se) was the basis for the Swedish Ministry of Education's decisions on what programmes should be accepted.

Evaluation of Master programme in Interaction Design
Following the report on Bachelor programmes, I was asked to be part of HSV´s evaluation K3 in Malmø´s Master programme in Interaction Design. The report was published in 2007.

Internal evaluation of Informatics Programme at HINT
In 2007 I was asked to lead an evaluation that the Regional College in Steinkjer, Norway (HINT) did of their Informatics bachelor programme. I ran a workshop, had interviews and produced an internal report.

Representative

I am Norwegian representative in IFIP TC 13 (HCI).

Teaching and administration

This chapter describes my teaching experience. That includes the courses I have been teaching, those that I have built up from scratch, and my involvement in the design of teaching programmes.

Teaching at NTNU (1986-present)

Over a period of 20 years I have been teaching the following courses at NTNU:

Programming language courses:
> Introduction to computers with BASIC and Assembler
> FORTRAN programming
> PROLOG programming
> SMALLTALK programming and Object Oriented A & D
> JAVA programming and Rational Rose
> PASCAL/DELPHI programming

Computer Science/HCI:
> Introduction to IT
> Algorithms and Data Structures
> Computer Graphics
> Educational Software
> Object-oriented analysis and design
> Human-Computer Interaction
> User-Interface Design
> Research Methodology in Computer Science
> Advanced topics in HCI (PhD level)

Philosophy:
> The History of Science
> Philosophy of Science

Of these courses I have built the following eight from scratch:

Introduction to computers (1986-90) (Basic level)
This is the first course that I taught at NTNU (then AVH-Lade). In lack of a good way of teaching assembler I constructed a virtual computer VN1 (Von Neuman 1) with its own instruction set and assembler language and implemented an interactive learning environment for this virtual computer. I also write a small textbook describing the virtual computer, the assembler language and the programming environment. The project was later taken over by the learning department at NTNU and developed into a product on the Windows PC platform.

Algorithms and Data Structures (1987-95) (Intermediate level)

For this course I used one of the standard textbooks. The course did consequently not require much creativity.

Object-oriented analysis & design (1988-98) (Intermediate level)

This course was an introduction to OO programming and concepts. At the time I started giving it there were few good textbooks that made it easy to make it into a practical course. This was before Java, and I selected Smalltalk as the language. When Java emerged I switched to this language, avoiding the endless discussions at that time about Smalltalk vs. C++ as an OO first language.

Logic Programming (1988-93) (Intermediate level)

This was a first course in logic programming. I selected a standard textbook, and used PROLOG as the language.

User interface design (1996-present) (Master level)

This is a course that I first built up at AVH. After one year I established cooperation with Øritsland at the department of Product Design at NTNU. He is teaching a similar course for his students. Since 1997 we have fused the practical part of the two courses. The students work in cross-disciplinary teams (2 computer science + 2 product design). During 10 weeks the students go through 2 ½ rounds in an interactive user centered design process where they learn field observation, user interface design, usability testing, video analysis and redesign. In addition they write an individual term paper on a self-selected HCI topic. During my sabbatical at Stanford in 1998 I was teaching a similar course with B. Verplank. This has been an inspiration for the course. The course is limited to 20 computer students and 20 design students. Since its beginning there have always been more applicants than the 20 we had room for.

Human-Computer Interaction (1999-present) (Intermediate level)

This is a course that is compulsory for 150-200 computer science students. It started out as a course in computer graphics. Together with a colleague (Trætteberg) we slowly transformed it into a course in HCI and Swing. I now teach it alone. It uses a standard HCI textbook (Schneiderman) and the student also learn about MVC and the practical use of the Java Swing framework. In the exercises the students implement in Java/Swing and learn how to make paper prototypes and do wizard-of-Oz usability tests.

Advanced topics in HCI (2004-present) (PhD level)

This is a PhD course in HCI research methodology. I have selected a reader consisting of some central research papers in the field. We run seminars, and the students write an individual term essay on HCI theory or research methodology.

Research methods in IT (2001-2005) (Master level)

This is a course on research methods in computer science, with a strong focus on qualitative methods. IT also contains a historical overview of the field.

Involvement in the design of the teaching programmes at NTNU

During my first 10 years at NTNU I was involved in the construction of the Bachelor and Master programme in informatics. I was a member of the educational committee at the department (Informatics department), was for many years responsible for editing our part of the booklet that describes NTNUs programmes and the courses.

After the fusion in 1996 of the informatics department and the computer science department into the current computer and information science department, I was involved in the design of the new "Bologna" Bachelor and M.Sc. programmes in informatics. I have also for some years been member of the educational committee at the department.

Administrative responsibilities at NTNU

I have been elected member of the department board of the informatics department (1990-94), and of the "faculty of natural science" from 1986-1990. I have also from 1986 until the present been member of department committees for equipment, room allocation and computing in a number of periods.

Teaching at ITU (2009-present)

Interaction Design (Master level)
I have been teaching the Interaction Design master course, being course responsible spring 2010.

Foundations of IxD and Design Research (FACT) (PhD level)
In addition I have initiated and led the PhD course FACT on research methods in Interaction Design/Design research, spring 2010.

Teaching and administration at Interaction Design Institute Ivrea, Italy (2001-2002)

During my one-year stay in Ivrea I had the title "professor - director of teaching" and was responsible for building up the new two-year master programme in interaction design. I ran this process as a collaborative effort involving faculty and external experts. The resulting programme structure was mainly stable for the whole life of the school (it was shut down in 2006).

As one of three directors of the school I was part of the leader team that planned and managed the administration of the school.

I also built and taught the following two courses:

Introduction to Interaction Design (Master level)
This was a shorter version of the user interface design course that I had built up in Trondheim.

Tangible user interfaces (Master level)
This was also a short course. I gave it together with B. Veplank from Interval Research / Stanford. We used Basic Stamp as the development tool. In conjunction with this course I built up an electronics and physical computing lab at the school to enable the students to construct working prototypes of tangible user interfaces.

Technology assessment project (Master level)
In 2002 I ran that as a student project on RFID technology and its potential in interaction design.

Teaching at Stanford University (1998)

During my sabbatical at Stanford I was involved in the following two courses:

The Phenomenological Foundations of Computer Science (Master level)
This is a course that I was co-teaching with T. Winograd. I was on Stanford's payroll as lecturer for this course and was responsible for making the reader, running the classes and giving assessments.

Interaction Design (Master level)
This is a course that I was co-teaching with B. Verplank. I ran some of the programming workshops, gave some lectures and was helping the students. The course has been an inspiration for me in the design of the similar courses at NTNU.

Teaching at Mid-Sweden University (1996-2000)

At mid-Sweden University I have been teaching Object-oriented systems development and Human-Computer Interaction. I built the courses from scratch, but they were to a large extent copies of the courses that I had built up at NTNU.

Other teaching

Over a period of 5 years from 1997-2000 I gave "commercial" HCI courses through Kantega in Oslo. I have also been giving a number of smaller courses, workshops and seminars for industry over the years.

Student supervision

This chapter gives an overview of my role as PhD and Master student supervisor.

PhD students

I have been primary or secondary advisor for the following PhD students:

Erlend Stav did his thesis on tool support for user interface design. This thesis was a continuation of his Master thesis and his work at SINTEF with the COMSPEC project. He started his PhD work before I had submitted my PhD. Torbjørn Skramstad at IDI therefore functioned as primary advisor and I was secondary advisor.

Yngve Dahl submitted his PhD thesis in July 2007, and the defense is planned to October 1st. I was secondary advisor on this thesis, with Øystein Nytrø as primary advisor. The thesis is a continuation of work done in his Master thesis. Nytrø and I have to a large degree shared the advisory work. This PhD was funded by Telenor R&D.

Gry Seland submitted her PhD thesis in 2010. I have been primary advisor for her, with Nytrø as secondary advisor. Similar to Dahl, we have shared the work.

Ole Andre Alsos finishes his thesis in 2011. His PhD was funded through the PocMap project in the NFR VERDIKT programme.

I am currently secondary advisor for Anita Das. Her PhD is funded through the St.Olav University Hospital.

I was seconday advisor for Anders Kofoed Pettersen at NTNU.

Master students

Since I first started supervising master student in 1991, I have been the primary advisor for close to 60 master students.

For the purpose of this presentation I have arranged them thematically as follows:
- HCI design and evaluation methods:
  - This is work where the focus is on user-centered design and evaluation methods. The student typically assesses one or more methods through a practical case.
- User interface design tools and environments:
  - This is work where the focus is on software tools for designing, prototyping or implementing user interfaces. The student typically makes use of an existing tool or develops a new tool.

- Ubiquitous and mobile computing:
  - This is work where the focus is on usability, interaction techniques and user behavior for non-desktop systems. The student typically develops a system and assesses its usability through a usability test.
- Usability evaluations and user interface design guidelines:
  - This covers work on user interfaces and usability. Examples include usability tests and work leading up to design guidelines.
- The context of design:
  - This is work where the focus is on the design process and its organizational context. Examples include studies of tender processes in IT-development.